

NORTH SHORE AMATEUR RADIO CLUB INC.

P.O. BOX #171, OSHAWA, ONT., L1H 7L1



Jan 1988

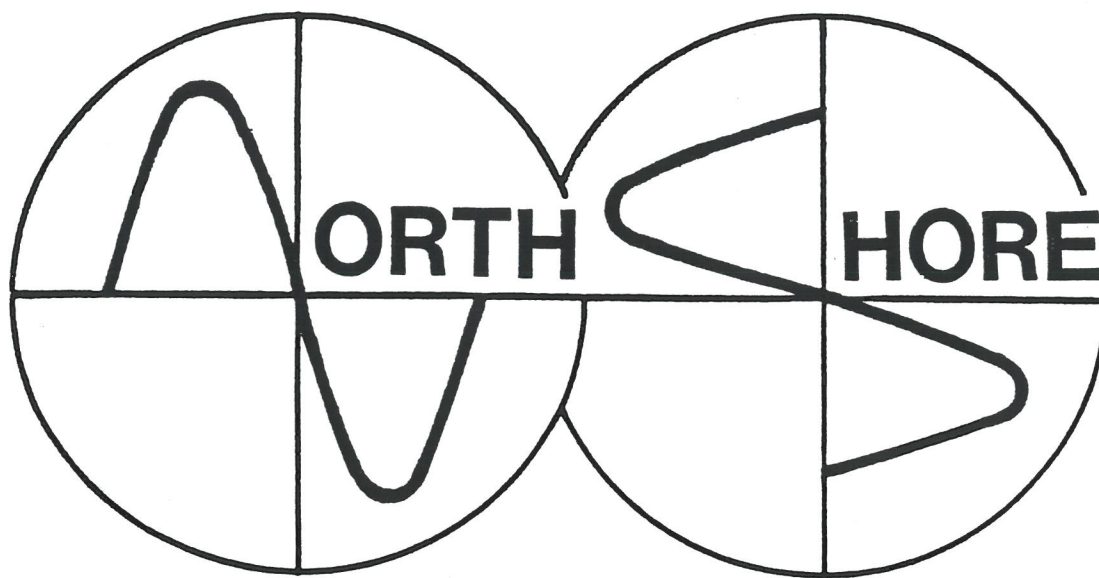
First Class Première classe

VE3CRK

87

Ralph
454 Holcan Ave
Oshawa

Day
Ont. L1G 5X6



**AMATEUR RADIO
CLUB**

00210

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AUDITOR	HARRY WESTWOOD	VE3 QG	416-683-5104

=====
CLUB STATION.....VE3 NSR

CLUB REPEATER.....VE3 OSH 147.720 MHZ IN 147.120 MHZ OUT.
 2-METER NET HOSTED BY ROY (AAF) OR A STAND-IN CONVENES EVERY
 THURSDAY AT 19:30 LOCAL TIME ON THE CLUBS REPEATER (OSH). AS PART
 OF THR NET, CODE PRACTICE IS PROVIDED BY BERNIE (ATI) BEGINNING AT
 20:30 LOCAL.

10-METER NET (UNOFFICIAL) IS USUALLY HOSTED BY RAY (OUB)- A GROUP
 OF LOCAL HAMS MEET SUNDAYS ON 28.200 MHZ USING CW FROM 09:
 10:00 LOCAL THEN SWITCH TO SSB PHONE UNTIL EXHAUSTED OR XYL'S
 CALL "DINNER".

===== CONTRIBUTIONS TO NEWSLETTER =====

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CONTRIBUTIONS MAY BE MAILED (ATTENTION THE EDITOR) TO THE
 N.S.A.R.C., BOX #171, OSHAWA, ONT., L1H 7L1 OR, IF URGENT, CALL ONE
 OF THE EDITORS DIRECTLY.

NOTE!- OPINIONS EXPRESSED ARE THOSE OF THE WRITERS AND DO NOT, OF
 NECESSITY, REFLECT THOSE OF N.S.A.R.C. MEMBERS IN GENERAL.
 ARTICLES DEEMED TO BE DEFAMATORY WILL NOT BE ACCEPTED.

=====
NEXT MEETING - MONDAY, JANUARY 11, 1988 AT 20:00 LOCAL (8:00 P.M.)
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THE GREEN ROOM OF THE ARTS RESOURCE CENTRE (BEHIND CITY
 HALL- CENTRE STREET SOUTH- SEE ENCLOSED MAP ON PAGE 3)

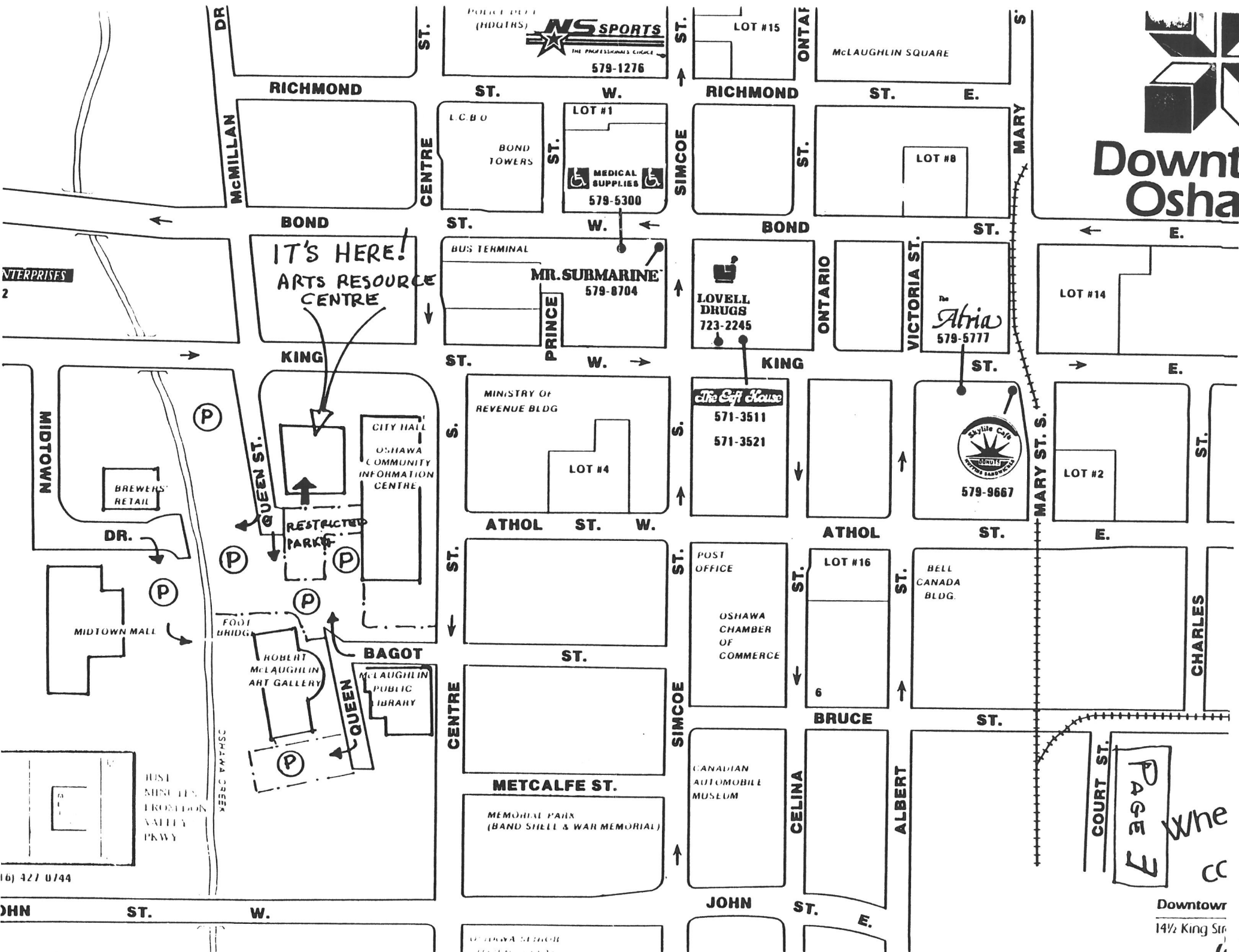
PROGRAM-THIS MONTH THE MEETING WILL FEATURE OUR FUTURE
 IN THAT IT WILL BE OUR OPPORTUNITY TO HELP GUIDE OUR
 TO DAY OPERATIONS THROUGH THE ELECTION OF OUR NEW
 EXECUTIVE. AFTER THE ELECTIONS WE WILL HAVE ANOTHER
 CHANCE TO RAG-CHEW WITH OUR FRIENDS (AFTER SANTA !).

=====
MAKES SENSE- THE BRIEF SATISFACTION YOU GET FROM TELLING SOMEONE OFF
=====

CANNOT MATCH THE ENDLESS HAPPINESS OF HAVING OVERLOOKED
 IT. (CREDIT TO WHOMEVER ORIGINALLY SAID IT-EDITOR)



Downtown Oshawa



PAGE 7

Whe CC

Downtown
14 1/2 King St
E.

WELCOME TO 1988

HAVING SURVIVED ANOTHER HOLIDAY SEASON AND THE ENSUING HANGOVERS, WE CAN GET DOWN TO THE YEARLY BUSINESS OF ELECTING A NEW EXECUTIVE AND HELPING THEM TO SET UP A SERIES OF MEETINGS WHICH WILL PROVIDE INTEREST AND EDUCATION TO THE MEMBERS OF OUR CLUB.

THE NEW YEAR MAY ALSO BRING SOME BARGAINS FROM THE SHACK OF AMATEURS WHO UPGRADED THEIR EQUIPMENT WITH THE HELP OF SANTA CLAUS SO, IT MIGHT BE WORTH WHILE WATCHING THE SWAP COLUMN FOR A FEW ISSUES.

YOUR EDITOR WILL NOT BE DOING MUCH TYPING FOR THE FIRST 1988 ISSUE OF THE NEWSLETTER BECAUSE HE TRIED TO TRIM HIS FINGERNAILS WITH A POWER PLANER LAST MONTH BUT HE SHOULD BE BACK IN BUSINESS BY NEXT MONTH. SINCE OUR OWN MEMBERS HAVE NOT, TO DATE, SUPPLIED MUCH IN THE WAY OF ARTICLES OF INTEREST TO EDIT, THIS ISSUE WILL AGAIN BE FILLED LARGELY WITH AN ARTICLE, GLEANED FROM RADIO COMMUNICATION VIA YRARC'S SPLATTER, ON A G5RV ANTENNA. OUR THANKS TO SPLATTER FOR PAGES 5,6,&7.

MANY THANKS FROM DEL WHITTINGTON (LFW)

I WOULD LIKE TO THANK ALL THE MEMBERS OF THE NRTH SHORE AMATEUR RADIO CLUB FOR THE CARDS, AND VISITS AT WELLESLEY HOSPITAL AND AT MY HOME QTH DURING MY ILLNESS; THEY WERE VERY MUCH APPRECIATED. I WOULD ALSO LIKE TO HEAR MORE OF YOU ON 28.200 MHZ, SUNDAYS, CW AT 1300 UTC, SSB AT 1400 UTC.

73 ES TNX, DEL (VE3LFW)

EDITOR'S NOTE- THE ABOVE NOTE WAS DELIVERED TO THE EDITOR THE DAY AFTER THE LAST ISSUE WENT TO THE PRINTERS. OUR APPOLOGIES TO DEL WHO HAS SINCE MOVED BACK TO CHATHAM, ONT. AND OUR BEST WISHES, I'M SURE FROM ALL MEMBERS.

RAVENSCROFT NOT ONLY CASE

THE JACK RAVENSCROFT CASE IN OTTAWA, WHILE IT MAY BE THE MOST NEWSWORTHY, IS NOT THE ONLY ONE IN WHICH AMATEUR RADIO OPERATOR'S HAVE HAD THEIR OPERATIONS RESTRICTED DESPITE HAVING THEIR STATIONS CHECKED AS 'CLEAN' BY THE DOC.

IN WINNEPEG, ROBERT KAUFFMAN (VE4GV) WAS IN TROUBLE WHEN ONE OF HIS NEIGHBOURS EXPERIENCED A TV RECEPTION PROBLEM AND REFUSED TO MAKE MODIFICATIONS TO HIS EQUIPMENT WHICH, IF MADE, WOULD ELIMINATE THE PROBLEM. THIS CASE RESEMBLES THE RAVENSCROFT CASE EXCEPT THAT THE OFFENDING EQUIPMENT IS A RADIO DEVICE WHICH COMES UNDER THE JURISDICTION OF THE DOC. IN THIS CASE, ROBERT HAS BEEN RESTRICTED TO 100 WATTS OUTPUT POWER.

THE OTHER CASE INVOLVED AN ALBERTA AMATEUR WHO HAS BEEN SHUT DOWN BUT I HAVE NO OTHER INFORMATION REGARDING THE CASE; HOWEVER, BOTH THESE CASES INDICATE THAT THE DOC WILL NOT HESITATE TO INVOKE SECTION 64.4 OF THE GENERAL RADIO REGULATIONS, PART 2 WHEN NECESSARY.

MORE CASES LIKE THIS CANNOT HELP BUT HURT HAMMING AND CAUSE A REDUCTION IN THE NUMBER OF OPERATOR'S ENJOYING THEIR HOBBY BY DISCOURAGING OLDER HAMS WHO DON'T NEED THE HASSLE AND IN TURNING NEW PROSPECTIVE HAMS AWAY FROM A HOBBY IN WHICH THEY HAVE NOT YET GAINED ANY CONFIDENCE.

for those of you who use the G5RV Multiband Antenna and would like to know more about the theory behind it: this article appeared in RADCOR July 1984:

by Louis Varney, G5RV

THE G5RV ANTENNA, with its special feeder arrangement, is a multiband centre-fed antenna capable of very efficient operation on all hf bands from 3.5 to 28MHz, specifically designed with dimensions which allow it to be installed in gardens which can accommodate a reasonably-straight run of about 102ft (31.1m) for the "flat-top". However, because the most useful radiation from a horizontal or inverted-V resonant antenna takes place from the centre two-thirds of its total length, up to one-sixth of this total length at each end of the antenna may be dropped vertically, semi-vertically, or bent at some convenient angle to the main body of the antenna without significant loss of effective radiation efficiency. For installation in a very limited space, the dimensions of both the "flat-top" and the matching section can be divided by a factor of two to make the half-size G5RV, which is a very efficient antenna from 7 to 28MHz. The full-size G5RV will also function on the 1.8MHz band if the station end of the feeder (either balanced or coaxial-type) is strapped and fed by a suitable astu using a good earth connection or a counterpoise wire. Similarly, the half-size version may be used thus on the 3.5 and 1.8MHz bands.

In contradistinction to multiband antennas in general, the full-size G5RV antenna was *not* designed as a $\lambda/2$ dipole on the lowest frequency of operation, but as a $3\lambda/2$ centre-fed long-wire antenna on 14MHz, where the 34ft (10.36m) open-wire matching section functions as a 1:1 impedance transformer, enabling the 75 Ω twinlead or 50/80 Ω coaxial cable feeder to "see" a close impedance match on that band with a consequently low vswr on the feeder. However, on all the other hf bands the function of this section is to act as a "make-up" section to accommodate that part of the standing-wave (current and voltage components) which, on certain of the operating frequencies, cannot be completely accommodated on the "flat-top" (or inverted-V) radiating portion. The design centre frequency for the full-size version is 14,150kHz, and the dimension of 102ft (31.1m) is derived from the formula for long-wire antennas which is:

$$\text{Length (ft)} = \frac{492(n - 0.05)}{f_{\text{MHz}}} = \frac{492 \times 2.95}{14.15} = 102.57\text{ft (31.27m)}$$

where n = number of half-wavelengths of the wire (flat-top).

In practice, since the whole system will be brought to resonance by the use of an astu, the antenna is cut to 102ft (31.1m).

As it does not make use of traps or ferrite beads, the "dipole" portion becomes progressively longer in electrical length with increasing frequency. This effect confers certain advantages over a trap or ferrite-bead loaded dipole because, with increasing electrical length, the major lobes of the vertical component of the polar diagram tend to be lowered as the operating frequency is increased. Thus, from 14MHz up, most of the energy radiated in the vertical plane is at angles suitable for dx working. Furthermore, the polar diagram changes with increasing frequency from a typical $\lambda/2$ dipole pattern at 3.5MHz and a $2 \times \lambda/2$ in-phase pattern at 7 and 10MHz to that of a "long-wire" antenna at 14, 18, 21, 24 and 28MHz.

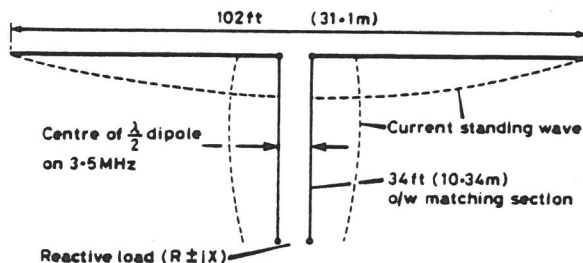


Fig 1. Current standing-wave distribution on the G5RV antenna and matching section at 3.5MHz. The antenna functions as a $\lambda/2$ dipole partially folded up at the centre

Although the impedance match for 75 Ω twinlead or 80 Ω coaxial cable at the base of the matching-section is very good on 14MHz, and even the use of 50 Ω coaxial cable results in only about a 1.8:1 vswr on this band, the use of a suitable astu is necessary on all the other hf bands because, on those bands, the antenna plus the matching-section will present a *reactive* load to the feeder. Thus, the use of the correct type of astu (unbalanced input to balanced output if twin-wire feeder is used, or unbalanced to unbalanced if coaxial feeder is used) is essential in order to ensure the maximum transfer of power to the antenna from a typical transceiver having a 50 Ω coaxial (unbalanced) output. Also to satisfy the stringent load conditions demanded by such modern equipment employing an alc system which "senses" the vswr condition presented to the solidstate transmitter output

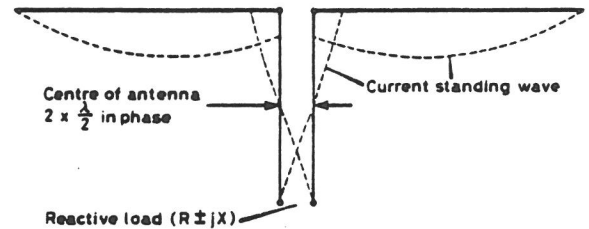


Fig 2. Current distribution on the antenna and matching section on 7MHz. The antenna now functions as a collinear array with two half-waves fed in phase

stage so as to protect it from damage which could be caused by a reactive load having a vswr of more than about 2:1:1).

The above reasoning does not apply to the use of the fullsize G5RV antenna on 1.8MHz, or to the use of the half-size version on 3.5 and 1.8MHz. In these cases the station end of the feeder conductors should be "strapped" and the system tuned to resonance by a suitable series-connected inductance and capacitance circuit connected to a good earth or counterpoise wire. Alternatively, an "unbalanced-to-unbalanced" type of astu such as a "T" or "L" matching circuit can be used[2]. Under these conditions the "flat-top" (or inverted-V) portion of the antenna plus the matching section and feeder function as a "Marconi" or "T" antenna, with most of the effective radiation taking place from the vertical, or near vertical, portion of the system; the "flat-top" acting as a top-capacitance loading element. However, with the system fed as described above, very effective radiation on these two bands is obtainable even when the "flat-top" is as low as 25ft (7.6m) above ground.

Theory of operation

The general theory of operation has been explained above; the detailed theory of operation on each band from 3.5 to 28MHz follows, aided by figures showing the current standing wave conditions on the "flat-top" and the matching (or make-up) section. The relevant theoretical horizontal plane polar diagrams for each band may be found in any of the specialized antenna handbooks. However, it must be borne in mind that: (a) the polar diagrams generally shown in two dimensional form are, in fact, three dimensional (ie solid) figures around the plane of the antenna; and (b) all theoretical polar diagrams are modified by reflection and absorption effects of near-by conducting objects such as wire fences, metal house guttering, overhead electric power and telephone wires, house electric wiring systems, house plumbing systems, metal masts and guy wires, and large trees. Also the local earth conductivity will materially affect the actual polar radiation pattern produced by an antenna. Theoretical polar diagrams are based on the assumptions that an antenna is supported in "free space" above a perfectly conducting ground. Such conditions are obviously impossible of attainment in the case of typical amateur installations. What this means in practice is that the reader should not be surprised if any particular antenna in a typical amateur location produces contacts in directions where a null is indicated in the theoretical polar diagram and perhaps not such effective radiation in the directions of the major lobes as theory would indicate.

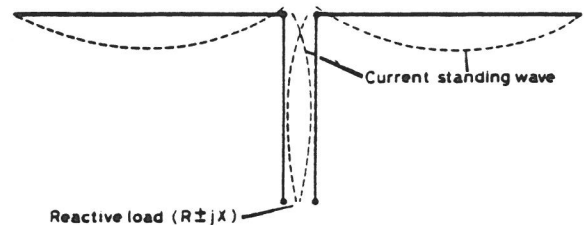


Fig 3. Current standing-wave distribution on the antenna and matching section on 10MHz. The antenna functions as a collinear array with two half-waves fed in phase

3.5MHz. On this band each half of the "flat-top" plus about 17ft (5.18m) of each leg of the matching-section forms a fore-shortened or slightly folded up $\lambda/2$ dipole. The remainder of the matching-section acts as an unwanted but unavoidable reactance between the *electrical* centre of the dipole and the feeder to the astu. The polar diagram is effectively that of a $\lambda/2$ antenna. See Fig 1.

7MHz. The "flat-top" plus 16ft (4.87m) of the matching section now functions as a partially-folded-up "two half-waves in phase" antenna producing a polar diagram with a somewhat sharper lobe pattern than a

G5RV UP-TO-DATE (cont'd)

by Louis Varney, G5RV

$\lambda/2$ dipole due to its colinear characteristics. Again, the matching to a 75 Ω twinlead or 50/80 Ω coaxial feeder at the base of the matching section is degraded somewhat by the unwanted reactance of the lower half of the matching section but, despite this, by using a suitable astu the system loads well and radiates very effectively on this band. See Fig 2.

10MHz. On this band the antenna functions as a two half-wave in-phase colinear array, producing a polar diagram virtually the same as on 7MHz. A reactive load is presented to the feeder at the base of the matching section but, as for 7MHz, the performance is very effective. See Fig 3.

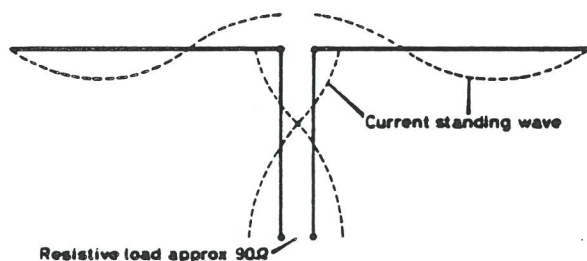


Fig 4. Current standing-wave distribution on the antenna and matching section on 14MHz. In this case the antenna functions as a centre-fed long-wire of three half-waves out of phase. The matching section now functions as a 1:1 impedance transformer, presenting a resistive load of approximately 90 Ω at the lower end

14MHz. At this frequency the conditions are ideal. The "flat-top" forms a $3\lambda/2$ long centre-fed antenna which produces a multi-lobe polar diagram with most of its radiated energy in the vertical plane at an angle of about 14°, which is very effective for dx working. Since the radiation resistance at the centre of a $3\lambda/2$ long-wire antenna supported at a height of $\lambda/2$ above ground of average conductivity is about 90 Ω , and the 34ft (10.36m) matching section now functions as a 1:1 impedance transformer, a feeder of anything between 75 and 80 Ω characteristic impedance will "see" a non-reactive (ie resistive) load of about this value at the base of the matching section, so that the vswr on the feeder will be very nearly 1:1. Even the use of 50 Ω coaxial feeder will result in a vswr of only about 1.8:1. It is here assumed that 34ft (10.36m) is a reasonable average antenna height in amateur installations. See Fig 4.

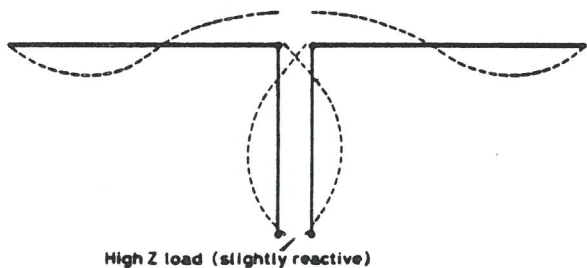


Fig 5. Current standing-wave distribution on the antenna and matching section on 18MHz. The antenna functions as two full-wave antennas, slightly folded up at the centre, fed in phase

18MHz. The antenna functions as two full-wave antennas fed in phase; combining the broadside gain of a two-element colinear array with somewhat lower zenithal angle radiation than a $\lambda/2$ dipole due to its long-wire characteristic. See Fig 5.

21MHz. On this band the antenna works as a "long-wire" of five half-waves, producing a multilobe polar diagram with very effective low zenithal angle radiation. Although a high resistive load is presented to the feeder at the base of the make-up section, the system loads very well when used in conjunction with a suitable astu and radiates very effectively for dx contacts. See Fig 6.

24MHz. The antenna again functions effectively as a $5\lambda/2$ "long-wire" but, because of the shift in the positions of the current anti-nodes on the flat-top and the matching section, as may be seen from Fig 7, the matching or "make-up" section now presents a much lower resistive load condition to the feeder connected to its lower end than it does on 21MHz. Again, the polar diagram is multilobed with low zenithal angle radiation.

28MHz. On this band, the antenna functions as two "long-wire" antennas, each of three half-waves, fed in-phase. The polar diagram is similar to that of a $3\lambda/2$ "long-wire" but with even more gain over a $\lambda/2$ dipole due to the colinear effect obtained by feeding two $3\lambda/2$ antennas, in line and in close proximity, in-phase. See Fig 8.

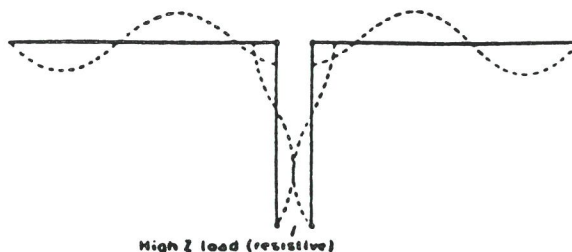


Fig 6. Current standing-wave distribution on the antenna and matching section on 21MHz. On this band the antenna works as a long-wire of five half-waves. The base of the matching section presents a virtually non-reactive high impedance load to the feeder

Construction

The antenna

The dimensions of the antenna and its matching section are shown in Fig 9. The "flat-top" should, if possible, be horizontal and run in a straight line, and should be erected as high as possible above ground. In describing the theory of operation, it has been assumed that it is generally possible to erect the antenna at an average height of about 34ft (10.36m), which happens to be the optimum height for the antenna at 14MHz. Although this is too low for optimum radiation efficiency on 1.8, 3.5 and 7MHz for any horizontal type of antenna, in practice few amateurs can install masts of the optimum height of half a wavelength at 3.5 or 7MHz, and certainly not at 1.8MHz.

If, due to limited space available, or to the shape of the garden, it is not possible to accommodate the 102ft (31.1m) top in a straight line, up to about 10ft (3m) of the antenna wire at each end may be allowed to hang vertically or at some convenient angle, or be bent in the horizontal plane, with little practical effect upon performance. This is because, for any resonant dipole antenna, most of the effective radiation takes place from the centre two-thirds of its length where the current antinodes are situated. Near to each end of such an antenna, the amplitude of the current standing wave falls rapidly to zero at the outer extremities; consequently, the effective radiation from these parts of the antenna is minimal.

The antenna may also be used in the form of an inverted-V. However, it should be borne in mind that, for such a configuration to radiate at maximum efficiency, the included angle at the apex of the V should not be less than about 120°[3]. The use of 14swg enamelled copper wire is recommended for the flat-top or V, although thinner gauges such as 16 or even 18swg can be used.

The matching section

This should be, preferably, of open-wire feeder construction for minimum loss. Since this section *always* carries a standing-wave of current (and voltage) its actual impedance is unimportant. A typical, and very satisfactory, form of construction is shown in Fig 10. The feeder spreaders may be made of any high-grade plastic strips or tubing; the clear plastic tubing sold for beer or wine syphoning is ideal.

If it is desired to use 300 Ω ribbon type feeder for this section, it is strongly recommended that the type with "windows" be used because of its much lower loss than that with solid insulation throughout its length, and its relative freedom from the "detuning" effect caused by rain or snow. If this type of feeder is used for the matching section, allowance must be made for its velocity factor (vf) in calculating the mechanical length required to resonate as a half-wave section *electrically* at 14-15MHz. Since the vf of standard 300 Ω ribbon feeder is 0.82, the *mechanical* length should be 28ft (8.5m). However, if 300 Ω ribbon with "windows" is used, its vf will be almost that of open-wire feeder, say 0.90, so its *mechanical* length should be 30.6ft (9.3m). (300 Ω ribbon feeder with "windows" is available from W. H. Westlake, Clawton, Holsworthy, Devon; Type BOFA GMP6.)

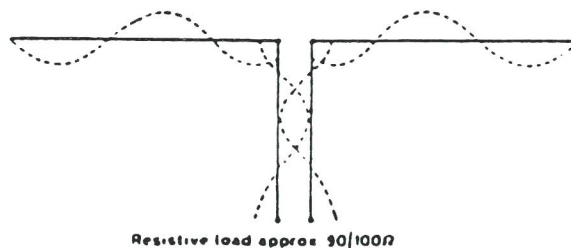


Fig 7. Current standing-wave distribution on the antenna and matching section on 24MHz. The antenna functions as a long-wire of five half-waves

by Louis Varney, G5RV

G5RV UP-TO-DATE (cont'd)

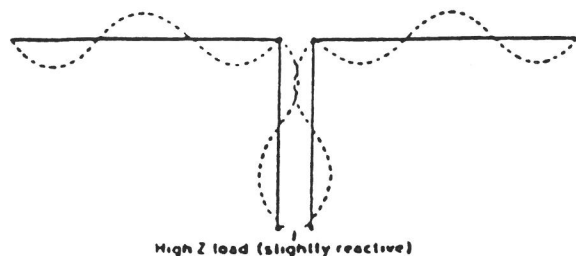


Fig 8. Current standing-wave distribution on the antenna and matching section on 28MHz. The antenna functions as two long-wire antennas each of three half-waves long, fed in phase. A very effective form of antenna giving good multi-lobe, low zenithal angle, radiation

This section should hang vertically from the centre of the antenna for at least 20ft (6.1m) or more if possible. It can then be bent and tied off to a suitable post with a length of nylon or terylene cord so as to be supported at above head-height to the point where, supported by a second post, its lower end is connected to the feeder.

The feeder

The antenna can be fed by any convenient type of feeder provided always that a suitable type of astu is used. In the original article describing the G5RV antenna, published in the, then, *RSGB Bulletin* November 1966, it was suggested that if a coaxial cable feeder was used, a balun might be employed to provide the necessary unbalanced-to-balanced transformation at the base of the matching section. This was because the antenna and its matching section constitute a *balanced* system, whereas a coaxial cable is an *unbalanced* type of feeder. However, later experiments and a better understanding of the theory of operation of the balun indicated that such a device was unsuitable because of the highly reactive load it would "see" at the base of the matching or "make-up" section on most hf bands.

It is now known that if a balun is connected to a reactive load presenting a vswr of more than about 2:1, its internal losses increase, resulting in heating of the windings and saturation of its core (if used). In extreme cases, with relatively high power operation, the heat generated due to the power dissipated in the device can cause it to burn out. However, the main reason for not employing a balun in the case of the G5RV antenna is that, unlike an astu which employs a *tuned circuit*, the balun cannot compensate for the reactive load condition presented to it by the antenna on most of the hf bands, whereas a suitable type of astu can do this most effectively and efficiently.

Recent experiments by the author to determine the importance or otherwise of "unbalance" effects caused by the direct connection of a coaxial feeder to the base of the matching section had a rather surprising result. They proved that, in fact, the hf currents measured at the junction of the inner conductor of the coaxial cable with one side of the (balanced) matching section and at the junction of the outer coaxial conductor (the sheath) with the other side of this section are virtually *identical* on all bands up to 28MHz, where a slight but inconsequential difference in these currents has been observed. There is, therefore, no need to provide an unbalanced-to-balanced device at this junction when using a coaxial feeder.

However, the use of an *unbalanced-to-unbalanced* type of astu between the coaxial output of a modern transmitter (or transceiver) and the coaxial feeder is essential because of the reactive condition presented at the station end of this feeder which, on all but the 14MHz band, will have a fairly high to high vswr on it. This vswr, however, will result in insignificant losses on a good-quality coaxial feeder of reasonable length; say, up to about 70ft (21.3m). Because it will, inevitably, have standing waves on it, the actual characteristic impedance of the coaxial cable is unimportant, so that either 50Ω or 80Ω type can be used.

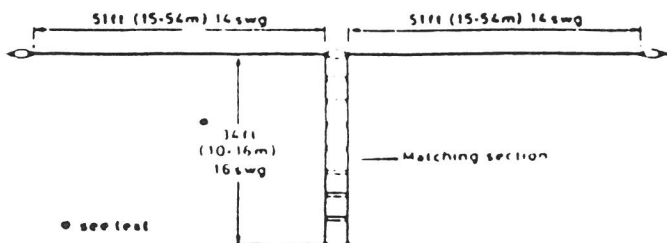


Fig 9. Construction dimensions of the G5RV antenna and matching section

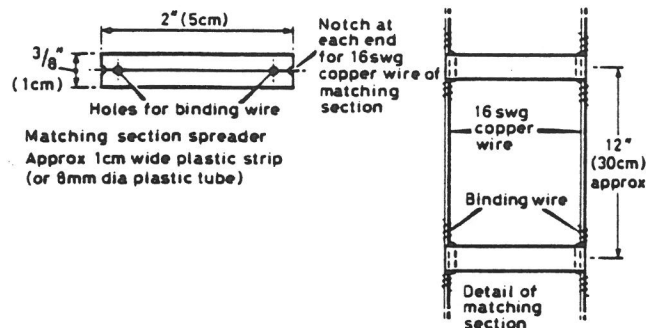


Fig 10. Constructional details of the matching section. Also suitable for open-wire feeder construction

Another very convenient type of feeder that may be used is 75Ω twinlead. However, because of the relatively high loss in this type of feeder at frequencies above about 7MHz, especially when it has a high vswr on it, it is recommended that not more than about 50 to 60ft (15.2 to 18.3m) of this type of feeder be used between the base of the matching section and the astu. Unfortunately the 75Ω twinlead available in the UK is the *receiver* type; the much less lossy *transmitter* type is available in the USA.

By far the most efficient feeder is the "open wire" type. A suitable length of such feeder can be constructed in exactly the same way as that described for the open-wire matching section. If this form of feeder is employed, almost any convenient length may be used from the centre of the antenna right to the astu (balanced) output terminals. In this case, of course, the matching section becomes an integral part of the feeder. A particularly convenient length of open-wire feeder is 84ft (25.6m), because such a length permits parallel tuning of the astu circuit on all bands from 3.5 to 28MHz with conveniently located coil taps in the astu coils for each band, or, where

the alternative form of astu employing a three-gang 500pF/section variable coupling capacitor is used [4] the optimum loading condition can be achieved for each band. However, this is not a rigid feeder length requirement and almost any length that is mechanically convenient may be used. Since this type of feeder will always carry a standing wave, its characteristic impedance is unimportant, and sharp bends, if necessary, may be used without detriment to its efficiency. It is only when this type of feeder is correctly terminated by a resistive load equal to its characteristic impedance that such bends must be avoided.

Coaxial cable hf choke

Under certain conditions, either due to the inherent "unbalanced-to-balanced" effect caused by the direct connection of a coaxial feeder to the base of the (balanced) matching section, or to pick-up of energy radiated by the antenna, a current may flow on the *outside* of the coaxial *outer conductor*. This is an undesirable condition and may increase chances of tvi to nearby tv receivers. This effect may be considerably reduced, or eliminated, by winding the coaxial cable feeder into a coil of 8 to 10 turns about 6in in diameter immediately below the point of connection of the coaxial cable to the base of the matching section. The turns may be taped together or secured by nylon cord.

It is important, of course, that the junction of the coaxial cable to the matching section be made thoroughly water-proof by any of the accepted methods; binding with several layers of plastic insulating tape or self-amalgamating tape and then applying two or three coats of polyurethane varnish, or totally enclosing the end of the coaxial cable and the connections to the base of the matching section in a sealant such as epoxy resin.

References

- [1], [2], [4] "ATU or astu?", by Louis Varney, G5RV. *Rad Com* August 1983.
- [3] "HF antennas in theory and practice—a philosophical approach." Louis Varney, G5RV. *Rad Com* September 1981.

Thanks to Stan VE3DDX for suggesting this reprint from RSGB's RADCOM.

S(ome) W(ant) A(l)l P(eruse)

THIS IS YOUR SWAP, SELL OR BUY COLUMN --TO HAVE AN ARTICLE LISTED, JUST MAIL INFORMATION TO THE EDITOR OR PHONE IT IN (723-5758)

FOR SALE--NO NEW ITEMS

WANTED----BY MAC (XI) 723-8484--IS LOOKING FOR A CHEAP 2-METER RIG (HE MENTIONED A HUNDRED DOLLAR FIGURE) SO THIS IS AN OPPORTUNITY TO SELL AND UP-GRADE. LET'S GET HIM BACK ON THE AIR!!

NEXT MEETING

THE FEBRUARY MEETING WILL FEATURE A VISIT FROM A GENTLEMAN WHO WORKS FOR THE DOC AND WILL NO DOUBT BE ABLE TO SHED A LITTLE LIGHT ON THE FUTURE OF HAMS AND HAMMING. PLAN TO BE THERE.

NOTE!! AFTER THE NEW YEAR CELEBRATIONS ARE OVER WE CHANGE TO MONDAY EVENINGS INSTEAD OF TUESDAY AND AT OUR NEW LOCATION. (SEE MAP ON PAGE 3).

PERMANENT REMINDER

IF YOU ARE READING THIS NEWSLETTER OVER THE SHOULDER OF THE HAM WHOSE NAME APPEARS ON THE MAILING LABEL BECAUSE YOU FORGOT TO MAIL IN YOUR RENEWAL OR BECAUSE YOU HAVE NEVER BEEN A MEMBER OF OUR CLUB, NOW'S YOUR CHANCE! PLEASE, USE THE FORM AND INFORMATION BELOW TO JOIN US. (IF THE OWNER WON'T PART WITH IT, USE A FACSIMILE (OR SOMETHING SIMILAR).

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